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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

SINGH, RAMNANDAN P

ART UNIT PAPER NUMBER

2646

DATE MAILED: 08/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/602,246

Applicant(s)

QIU ET AL.

Examiner

Ramnandan Singh

Art Unit

2646

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 June 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-29 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 June 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities:

Specification states "discrete fourier transform (DFT)" in Para: 0028, page 7.

Replace the word "fourier" with "Fourier".

A similar thing holds with the Abstract of the disclosure.

Appropriate correction is required.

Claim Objections

2. Claims 1, 11, 18, 26 and 28 are objected to because of the following informalities: Claim recites the limitations "determining a discrete **fourier** transform value" in line 4, "summing a set of discrete **fourier** transform values" in line 6, and "a set of discrete **fourier** transform values" in line 7.

Replace the word "fourier" with "Fourier".

A similar thing holds for claims 11, 18, 26 and 28.

Appropriate correction is required.

Double Patenting

3. ANALYSIS:

To demonstrate that the co-pending application S/N: 10/655,094 and the instant application S/N: 10/602,246 are claiming common subject matter, a brief analysis is presented below:

(i) Claim 18 of Instant Application: An apparatus comprising:

a processor;

a memory coupled to the processor, the memory having stored thereon one or more executable instructions, which when executed by the processor cause the processor to perform a method comprising:

receiving one or more multi-tone signals at a voice-band modem, the signals transmitted over a local loop, the multi-tone signals containing a plurality of frequencies; determining a discrete fourier transform value for each of two or more frequencies of the plurality of frequencies, summing a set of discrete fourier transform values corresponding to a set of high frequencies to obtain a first value and summing a set of discrete fourier transform values corresponding to a set of low frequencies to obtain a second value; and determining a characteristic of the local loop based upon the first value and the second value.

(ii) Claim 17 of Co-pending Application S/N: 10/655,094: A system comprising:

a processor;

an extended voice-band modem; and

a memory coupled to the processor, the memory having stored thereon one or more executable instructions, which when executed by the processor cause the

processor to receive one or more sets of downstream multi-carrier tones over a local loop, transmit upstream multi-carrier tones, sample the downstream carrier tones to generate a first multi-tone signal having a plurality of component frequencies within a spectrum band of the extended voice-based modem, sample the upstream carrier tones to generate a second multi-tone signal having a plurality of component frequencies within the spectrum band, divide a signal power of at least one component frequency of the first multi-tone signal by a signal power of at least one of the component frequencies of the second multi-tone signal to determine a ratio value, and determine a characteristic of the local loop based upon the ratio value.

(iii) For comparing the above two claims, it may be noted both claims use different terminologies, but these terminologies are equivalent:

frequency spectrum-----DFT;

Downstream-----high frequency signals; and

Upstream -----low frequency signal.

In light of this, both claims are claiming the same invention in terms of determining a characteristic of a local loop except for the fact that claim 17 further determines a ratio. Thus, the claim 18 of the instant application is an obvious variation of claim 17 of the co-pending application.

4. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the

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unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

5. Claims 18-25 and 28-29 of the instant application are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 17-24 of copending Application No. S/N: 10/655,094 in view of the above analysis. Although the conflicting claims of the co-pending application are not identical, they are not patentably distinct from each other because claim 18 of the instant application is a broad version of claim 17 of the co-pending application. This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 1-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lanier et al [US 6,671,312 B1] in view of Li [US 6,549,587 B1].

Regarding claim 1, Lanier et al teach a method shown in Fig. 1, comprising:
determining the characteristics of a local loop (i.e. subscriber loop) (130) using the multi-tone probing signals of a standard voice-based modem (103) [col. 3, lines 29-37; col. 3, lines 51-62; col. 2, lines 10-44].

Although Lanier et al teach determining the characteristics of the subscriber loop using both high and low frequency bands [col. 4, lines 56-62], they do not teach expressly using a first value derived from a set of high frequencies and a second value derived from a set of low frequencies.

Li teaches a method shown in Fig. 14, comprising:

receiving one or more multi-tone signals (76a) at a voice-band modem (i.e. a voice-band data modem)) [Fig. 23; col. 56, lines 25-31; col. 52, line 65 to col. 53, line 31], the signals transmitted over a local loop [Fig. 4; col. 8 , line 57 to col. 9, line 8], the multi-tone signals (DTMF) containing a plurality of frequencies [col. 32, line 61 to col. 33, line 8; col. 12, lines 29-46; col. 13, line 57 to col. 14, line 7]; determining a discrete Fourier transform value for each of two or more frequencies of the plurality of frequencies [Fig. 14; col. 62, lines 62-65], summing a set of discrete Fourier transform values corresponding to a set of high frequencies to obtain a first value (summer 234) and summing a set of discrete Fourier transform values corresponding to a set of low frequencies to obtain a second value (summer 240), and determining a twist (defined as the ratio of the power of in the lower band and the power in the upper band)[Fig. 14; col. 34, line 26 to col. 35, line 20] ; and determining a characteristic of the local loop based upon the first value and the second value. It is nevertheless a teaching to one of ordinary skill in the art to do the same thing to other applications.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the teachings of Li with Lanier et al in order to detect multi-tone signals [Li: col. 35, lines 17-20].

Claim 26 is essentially similar to claim 1 and is rejected for the reasons stated above apropos of claim 1.

Claim 28 is essentially similar to claim 1 except for a processor. Lanier et al teach a processor (124) coupled to the voice modem 103.

Claim 11 is essentially similar to claim 1 except for a machine-readable medium that provides executable instruction. The combination of Lanier et al and Li further teaches a machine-readable-medium that provides executable instructions wherein Lanier et al teach loading a software application on the logic device (102) coupled to the processor (114) [Lanier et al; col. 2, line 54 to col. 3, line 2], and Li teaches employing a computer-readable medium [Li; col. 78, lines 14-38].

Claim 18 is essentially similar to claim 11 and is rejected for the reasons stated above.

Regarding claim 2, the combination of Lanier et al and Li further teaches the method, wherein determining a characteristic of the local loop based upon the first value and the second value includes dividing the first value by the second value to obtain a power ratio value and determining a characteristic of the local loop based upon the power ratio value [Li; col. 35, lines 12-20].

Claims 12, 19, 27 and 29 are essentially similar to claim 2 and are rejected for the reasons stated above apropos of claim 2.

Regarding claim 3, although Lanier et al further teach detecting a presence of a loading coil (106) on the local loop 130 using modem probing signals in the frequency range of 600 Hz to 4000 Hz [col. 3, lines 22-50], it would have been obvious to one of ordinary skill in the art at the time the invention was made to use any frequencies including the set of high frequencies comprises 3450 Hz, 3600 Hz, and 3750 Hz, the set of low frequencies comprises 1500 Hz, 1650 Hz, and 1950 Hz in order to accommodate the characteristic of a local loop indicating the presence of a loading coil on the local loop subject to circuit, system and design constraints.

Claim 13 is essentially similar to claim 3 and is rejected for the reasons stated above.

Regarding claim 4, the combination of Lanier et al and LI further teaches the method 4, wherein determining a characteristic of the local loop based upon the power ratio value comprises determining the presence of a loading coil on the local loop if the power ratio is below a first specified value (i.e. within bounds) and determining the absence of a loading coil on the local loop if the power ratio is above a second specified value (i.e. not within bounds), the first specified value and the second specified value based upon the set of high frequencies and the set of low frequencies [Li; col. 35, lines 12-20].

Claims 14 and 20 are essentially similar to claim 4 and are rejected for the reasons stated above.

Regarding claims 5 and 21, the limitations are shown above.

Regarding claim 6, the combination of Lanier et al and Li further teaches the method, wherein the characteristic of the local loop is a length of the local loop [Lanier et al; col. 5, line 5 to col. 6, line 7; col. 5, lines 33-50].

Claim 22 is essentially similar to claim 6 and is rejected for the reasons stated above.

Regarding claim 7, the combination of Lanier et al and Li further teaches the method, wherein the second characteristic of the local loop is a length of the local loop [Lanier et al; col. 5, line 5 to col. 6, line 7; col. 5, lines 33-50].

Claims 15 and 23 are essentially similar to claim 7 and is rejected for the reasons stated above.

Regarding claims 8, 16 and 24, the limitations are shown above.

Regarding claim 9, Lanier et al further teach the method comprising: determining a broadband connection support capability of the local loop based upon the determination of the characteristic of the local loop; and displaying the results of the determination of broadband connection support [col. 1, lines 46-62; col. 3, lines 3-22; col. 6, line 24 to col. 8, line 58].

Claims 17 and 25 are essentially similar to claim 9 and are rejected for the reasons stated above.

Regarding claim 10, the limitations are shown above.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

(i) Duxbury [US 20020034220 A1] teaches testing a subscriber loop using a discrete multi-tone modulation for broadband applications [Figs. 1-8; Para: 0004; 0023; 0048; claims 1-22]; and

(ii) Mirfakhraei [US 6,570,912 B1] teaches a hybrid modem [Figs. 1-3; Abstract].

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ramnandan Singh whose telephone number is (571) 272-7529. The examiner can normally be reached on M-TH (8:00-5:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sinh Tran can be reached on (571) 272-7564. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Ramnandan Singh
Examiner
Art Unit 2646



SUHAN M
PRIMARY EXAMINER